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(54) SEASONING FOR COOKING IN MICROWAVE OVEN

(57)Abstract:

PURPOSE: To provide a seasoning comprising salt and amino acids or powdery soy containing the salt and the amino acids, a saccharide, and curdlan, and capable of preventing the separation of water and the liberation of broth, etc., and capable of maintaining the soft texture and the delicious state of materials, when added to meat, fishes, etc., and cooked in a microwave oven.

CONSTITUTION: A seasoning for cooking in a microwave oven contains (A) salt and amino acids, or a powdery soy containing the salt and the amino acids, (B) a saccharide (e.g. glucose or fructose), and (C) curdlan (e.g. the powder of the curdlan produced with the microbe which belongs to the genus *Alkaligenes*). The seasoning can impart scorched marks and gloss to the surface of a cooked food, enables smooth and simple cookings, and allows to uniformly roast food materials.

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CLAIMS

[Claim(s)]

[Claim 1] The powdered soy sauce containing salt, amino acid, or salt and amino acid, a saccharide, and the seasoning for microwave oven cooking characterized by coming to contain curdlan.

[Claim 2] The seasoning for microwave oven cooking characterized by coming to contain the powdered soy sauce containing salt, amino acid, or salt and amino acid, a saccharide, curdlan and starch, and/or cereals.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Industrial Application] This invention is a thing about the seasoning for microwave oven cooking useful although it adds into ingredients, such as meat and a fish, and being cooked with a microwave oven. In more detail While preventing isolation of water-repelling from the ingredient concerned at the time of cooking made into the fault of microwave oven cooking, bouillon, etc. generally and maintaining soft mouthfeel and the taste of ingredient original It is related with the seasoning [it is possible to give eye the burn equivalent to what carried out cooking with the usual frying pan etc. carried out beautifully brown, and gloss to the front face of cooking food, and] for microwave oven cooking which can moreover improve the operability at the time of cooking notably with the property.

[0002]

[Description of the Prior Art] While various cooking techniques and cookware are put in practical use and spreading in recent years with installation of the high-tech technique to meal industry, and development of the innovative cooking technique centering on it, it is safe, and the spread of the microwave ovens which moreover have simplicity, and development of the cooking technique by microwave heating have a remarkable thing, and are in the inclination which various kinds of researches and development competition of a microwave oven cooking product activate in for home use and business-use both.

[0003] Thus, while research and development of the cooking technique by the microwave oven and a related product activate The food related product for microwave oven cooking is also attaining to an extensive field. The former, Also in the microwave oven and microwave heating technique which are used as a core, the food for microwave oven cooking of dedication reaches thawing of common frozen foods, and quick cooking of food for developing chiefly. In current [the cake premix for microwave oven cooking by which the application field had been amplification-ized by leaps and bounds, for example, the class of food for microwave oven cooking was also developed at the beginning to] Commercial production of very broad food is performed and the example of development of a variety of products and a processing technique is reported in the field concerned until now until it results in a tempura product, fry food, snacks, meat and a fish-and-shellfishes product, a deep-fried-dishes product, etc.

[0004] It is in such various kinds of food for microwave oven cooking, it divides, and if some old examples of development are given in instantiation about the food for microwave oven cooking centering on ingredients to which this invention persons came as a development target, such as meat and a fish, and the food relevant to it, the following will be raised as the typical thing.

[0005] namely, conventionally as a thing about fly food first as a thing about the fly food immediately after proposing various kinds of products and processes, for example, carrying out an oil butterfly, and the fly food for microwave oven cooking with which same mouthfeel is obtained After a food raw material is immersed in the batter who consists of the wheat flour which carried out pneumatic with the frothing agent which has thermal coagulation nature, water, and a seasoning, The manufacture approach

of the frozen fly food for microwave oven cooking which bread crumbs are made to adhere, carries out an oil butterfly, and is characterized by freezing (JP,64-60334,A), moreover, as a thing about the fly food which there is almost no water-repelling after thawing, and does not have debasement even if it carries out long duration preservation The manufacturing method of the fly food clothes material characterized by carrying out microwave heating after attaching the batter liquid which becomes sponge dough from raw starch etc. and carrying out the cliff also of the roller (JP,59-162844,A), moreover, as what offers the fly Mr. food for microwave ovens aiming at realizing the same mouthfeel as the usual just made fly, flavor, a crispy feeling, etc. The fly food for microwave ovens (JP,2-16937,A) characterized by forming the batter layer, the 1st BUREDDA layer, the emulsion layer, and the 2nd BUREDDA layer in the outside of a food base material at least at this order is proposed.

[0006] Moreover, for example, powdered wheat protein, a powdered lactalbumin concentrate, corn flour, the dusting powder combination article for tempura (JP,4-187058,A) characterized by including at least three in corn starch are proposed as a thing about the tempura product for microwave oven cooking.

[0007] moreover, as a thing aiming at offering the food which has an appearance and mouthfeel same with having carried out deep-fried tofu only by carrying out cooking with a microwave oven as a thing about a frying-without-coating product Difficulty hydration particulate matters, such as coarse-granulated material of nuts, and high protein powder, such as albumen powder and wheat protein powder, The mix powder for frying without coating characterized by containing the farina and/or starch, and a coloring agent (JP,63-233751,A), moreover, lift and the appearance of stage fright as a thing aiming at it being desirable and obtaining the bad smell of meat, and the mix powder for frying without coating which lifts and does not have the bad smell of clothes The mix powder for frying without coating (JP,4-187059,A) characterized by including monosaccharide, casein, a dried albumen, amino acid, the leaf of the ground tea, and powdered soy sauce is proposed.

[0008] furthermore, as a thing aiming at obtaining the cooking food of the fish and shellfishes which carried out the baking color equivalent to the pottery which carried out cooking with the usual frying pan etc. In case cooking of the fish and shellfishes which are not cooked [cooking or] or its workpiece is wrapped and carried out with Japanese paper etc. After adjusting the moisture of these fish and shellfishes or the workpiece of those to extent out of which a drip does not come at the time of heating The coating liquid containing saccharides, such as a xylose and a glucose, is applied to the front face, and the cooking manufacture approach (JP,63-296667,A) of the fish and shellfishes characterized by carrying out dielectric heating of fish and shellfishes or its workpiece with a microwave oven through said Japanese paper etc. after that etc. is proposed.

[0009] Thus, the example of development of the food for microwave oven cooking for ingredients, such as meat and a fish It is various and for example, a frozen deep-fried-dishes product is thawed in these. Only not only in the thing about the so-called general microwave oven thawing and so-called general heating aiming at obtaining the product which heats and does not have inferiority in the usual deep-fried-dishes product, with for example, microwave oven cooking Although the thing aiming at giving an appearance equivalent to the usual deep-fried-dishes product and a pottery product, flavor, mouthfeel, etc. is also proposed So that it may see for the example of the above mentioned mix powder for frying without coating, for example, even if it is in the latter Even if it is restricted to the thing of the specific presentation for a specific product, and the improvement target is moreover also almost restricted to the thing consisting mainly of the appearance of a product, flavor, mouthfeel, etc., therefore it sees the conventional example of development The actual condition was that what has made reference about problems, such as an adhesive improvement to an improvement of the operability at the time of cooking which this invention makes one target, cookware, a package bag, etc., is not found at all.

[0010] On the other hand, about the curdlan currently used as an indispensable component in this invention, so that a postscript may be carried out Conventionally, generally, as a gelling agent of food, although it is used for development of various products for the purpose of the improvement in [, such as the gelation nature of various food, and a texture,] physical properties and the example of development is also various If it is in it and some of the typical thing is illustrated, as what forms in the front face of

fishery ***** the coat which was thin and became brave, for example As what offers fishery ***** (JP,2-79961,A) which it comes to cover with the gel film of curdlan and roast fish, and the preservation food which lifted and covered the front face of food, such as fly, with the ordinary temperature coagulation film The preservation food (JP,3-61454,A) covered with the ordinary temperature coagulation film which adheres the dispersion liquid of curdlan to food, is made to carry out thermal coagulation of the curdlan in a heating ambient atmosphere, and is characterized by covering the front face of food with curdlan is proposed.

[0011] moreover, as what uses for microwave heating cooking food the various functions which curdlan has Food for microwave heating cooking, such as a jelly [which comes to contain curdlan], bean jam and confectionary, extempore noodles, and egg workpiece (JP,2-411,A), Moreover, the food for microwave heating cooking (JP,2-124066,A) which comes to contain curdlan in the container for heating is proposed as what offers cooking food, such as hot jelly with good quality without the heating nonuniformity by the microwave oven.

[0012] These things are restricted to that for which the most used functions, such as gelation nature which curdlan has, texture amelioration nature, a binding property, water retention, and heating freezing characteristic, as they were. However, also about the curdlan concerned The actual condition was that what has made reference about problems, such as an adhesive improvement to an improvement of the operability at the time of cooking which this invention makes one target, cookware, a package bag, etc., is not found at all.

[0013] Thus, although the food for microwave oven cooking is developed variously conventionally The thing about the individual technique [all] for a specific product, mouthfeel, The thing centering on the improvement flavor and in physical properties etc. is most, and it divides. It is the baking product and frying-without-coating Mr. product using ingredients, such as meat and a fish. The usual heating, About the microwave oven cooking processing technique which can give heating equivalent to the product which performed baking cooking, and the baking effectiveness to a product In the product which the example of development is restricted and moreover used ingredients, such as the conventional meat and a fish There is much what has troubles, like actual cooking takes time and effort and time amount including the pretreatment. therefore, it not only can make the appearance of a product which was described above, flavor, mouthfeel, etc. to a thing equivalent to the usual cooking product, but The operability at the time of cooking which is the original target of microwave oven cooking has been improved, and developing the raw material for microwave oven cooking which can be cooked simple and promptly, a product, and a processing technique suited the situation currently strongly demanded in this industry.

[0014]

[Problem(s) to be Solved by the Invention] While this invention persons solve the conventional trouble which was described above based on such a situation Only by cooking the cooking product which consists of ingredients, such as meat and a fish, with a microwave oven, the usual heating, It not only has an appearance equivalent to the product manufactured by the baking cook stage, flavor, mouthfeel, etc., but Target simple nature [the operability at the time of the cooking concerned is improved, and / technique / microwave oven cooking] originally, As a result of repeating research wholeheartedly for the purpose of developing the new cooking raw material which can cook quick nature in the form employed efficiently as it was, a product, and a cooking technique, with the component property By using the seasoning for microwave oven cooking which consists of specific presentation and the property that the operability at the time of cooking can be improved notably, while it is possible to heighten the electric-wave absorptive power in the surface section of a product, and to raise the heating effectiveness It finds out that the desired end can be attained and came to complete this invention.

[0015] Namely, by adding into ingredients, such as meat and a fish, and cooking with a microwave oven, this invention prevents certainly isolation of water-repelling from the ingredient concerned it was presupposed that it was the fault of microwave oven cooking, bouillon, etc., and aims at offering the seasoning for microwave oven cooking which can maintain soft mouthfeel and the taste of ingredient original conventionally.

[0016] Moreover, this invention aims at offering the seasoning for microwave oven cooking which can give eye the burn equivalent to what carried out cooking with the usual frying pan etc. carried out beautifully brown, and gloss by cooking ingredients, such as meat and a fish, with a microwave oven.

[0017] Moreover, this invention aims at offering the seasoning for microwave oven cooking which can prevent isolation of water-repelling from an ingredient, bouillon, etc. certainly while it makes it possible to hold the clothes of the front face of ingredients, such as meat and a fish, firmly rather than the case where thermal coagulation nature proteins, such as an albumen, albumin, and wheat flour, are used.

[0018] Furthermore, this invention can sprinkle the powder of a seasoning uniformly to ingredient each. And while being able to perform cooking after there is effectiveness remarkable in the powder preventing cookware, in addition adhering and sprinkling a seasoning on an ingredient by hand until it heats with a microwave oven very smoothly and simple It aims at offering the seasoning for microwave oven cooking which has the outstanding property referred to as being able to roast an ingredient to homogeneity.

[0019]

[Means for Solving the Problem] This invention for attaining such an object consists of technical means of following (1) - (2).

(1) The powdered soy sauce containing salt, amino acid, or salt and amino acid, a saccharide, and the seasoning for microwave oven cooking characterized by coming to contain curdlan.

[0020] (2) The seasoning for microwave oven cooking characterized by coming to contain the powdered soy sauce containing salt, amino acid, or salt and amino acid, a saccharide, curdlan and starch, and/or cereals.

[0021] Then, this invention is further explained to a detail. this invention — said powdered soy sauce which contains salt, amino acid, or salt and amino acid as carried out, a saccharide, and curdlan — further It is a thing about the seasoning for microwave oven cooking characterized by coming to contain starch and/or cereals. It is a thing about the seasoning product for microwave oven cooking useful although it adds into ingredients, such as meat and a fish, and especially being cooked with a microwave oven. In this case as a final product Although products, such as yakitori, teriyaki of buri, and the Tatsuta **** of mackerel, will be illustrated as a typical thing if the baking product which calcinated the so-called meat or the so-called fish as it was, a teriyaki Mr. product, the frying-without-coating Mr. product which added and calcinated clothes are said still more concretely If it is the thing of equivalent not only to this but these, or resemblance, regardless of the class, it can consider as an object. Therefore, including meat and fish and shellfishes, ingredients as used in the field of this invention, such as meat and a fish, are the things of equivalent to it, or resemblance, and let them be objects regardless of the class and gestalt.

[0022] Next, as the latter of the powdered soy sauce containing the salt which is the indispensable component of the seasoning for microwave oven cooking of this invention, amino acid, or salt and amino acid, if salt and amino acid concerned are contained like the powder workpiece of liquefied soy sauce etc., it is not restricted especially and can be used regardless of the class. Moreover, the powdered soy sauce concerned as used in the field of this invention is defined as a thing also containing the synthetic compounds of this effect. Moreover, although independent or the things which were used together, such as monosaccharide, two saccharides, three saccharides, an oligosaccharide, and sugar-alcohol, are illustrated as a saccharide, a glucose, fructose, sucrose, a maltose, starch syrup hydrolyzate, an oligosaccharide, etc. are used suitably.

[0023] Moreover, the curdlan used by this invention can use the powder of usual curdlan which is generally known as heating freezing characteristic polysaccharide which makes a subject beta-1 and 3-glycoside linkage, and is known as what the bacillus of Alcaligenes and the AKURO Bacterium etc. produces, a granulation product, etc.

[0024] Furthermore, if it is the usual starch and cereals which are used as the so-called clothes material of frying without coating as the starch blended as one mode of this invention, and/or cereals, it can be used regardless of the class, for example, corn starch, potato starch, sweet potato starch, wheat flour, U.S. rice flour, rice flour, etc. will be raised.

[0025] Although the seasoning for microwave oven cooking of this invention is used for ingredients into which the above mentioned proper gestalt was processed beforehand, such as meat and a fish, in the form added directly In that case, while making the seasoning concerned adhere to the surface section simple and promptly at homogeneity In order to make it possible to control certainly the adhesion through which it passes and to improve the operability at the time of cooking notably, cookware etc. It is important to blend said curdlan as an indispensable component into the seasoning concerned, for example, even if it uses the heating freezing characteristic gelling agent of resemblance of others, such as carrageenan and gellant gum, such effectiveness is not acquired and the desired end cannot be attained.

[0026] Moreover, in this case, in order to make the operability at the time of cooking improve as described above, if it is the thing of equivalent or resemblance, it is employable [the seasoning for microwave oven cooking of this invention] with it being powdered, although gestalten, such as powder and granularity, are used for them as that gestalt, processing it suitably.

[0027] Although the seasoning for microwave oven cooking of this invention is manufactured by blending the powdered soy sauce which contains salt which was described above, amino acid, or salt and amino acid as the 1st mode, a saccharide, and curdlan into a raw material The raw material combination in that case is raised considering the powdered soy sauce containing the 4.16 to salt 28 section, the 0.18 to amino acid 1.2 section or salt, and amino acid as what has suitable making the 13 to 79 section, and a saccharide into the seven to 36 section, and making curdlan into the four to 27 section.

[0028] Moreover, although the seasoning for microwave oven cooking of this invention is manufactured by blending the powdered soy sauce which contains salt which was described above, amino acid, or salt and amino acid as the 2nd mode, a saccharide, curdlan and starch, and/or cereals into a raw material The raw material combination in that case the powdered soy sauce containing the 3.3 to salt 12 section, the 0.13 to amino acid 1.11 section or salt, and amino acid The nine to 33.3 section, Making a saccharide into the 11 to 36 section, and making the 1.5 to 21 section, starch, and/or cereals into the 36 to 75 section for curdlan is raised as a suitable thing.

[0029] Although the approach of the concrete approach of raw material combination carrying out package mixing with usual powder-mixing equipment, for example, a V type mixer, a ribbon mixer, etc. is illustrated in these cases, in addition to the basic-raw-materials component which could carry out sequential combination not only of this but these, and was described above, other raw material components may be added. Thus, although the seasoning for microwave oven cooking of this invention manufactured is added with a proper means into ingredients, such as meat of the above mentioned proper gestalt, and a fish, and it is made adhere, made and used for the surface section by homogeneity In this case, meat or the slice piece of a fish is contained in proper package bags, such as for example, a plastic wrapping bag, with the seasoning for microwave oven cooking of this invention, and if the whole is shaken lightly, homogeneity can be made for the seasoning concerned to adhere to the front face of the slice piece concerned simple and promptly. Thus, the seasoning for microwave oven cooking of this invention has the advantage which has an adhesive problem to a package bag and does not have the implementation-ization in the difficult conventional product at the point which can be used combining a proper package bag.

[0030] Thus, after adding the seasoning for microwave oven cooking of this invention on the surface of an ingredient, while isolation of water-repelling from the ingredient concerned conventionally made into the fault of microwave oven cooking, bouillon, etc. is certainly prevented by cooking with a microwave oven Eye the burn and gloss equivalent to what carried out cooking with the usual frying pan etc. which were carried out beautifully brown can be given, and soft mouthfeel and the taste of ingredient original can be maintained by this. In addition, in this case, the seasoning for microwave oven cooking of this invention does not need to say that it is what can be used regardless of that class, if it is microwave heating cooking equipment equivalent to a microwave oven.

[0031] As mentioned above, although the seasoning for microwave oven cooking of this invention can give the appearance of a final product, flavor, mouthfeel, etc. on level equivalent to what was cooked in the usual heating and a cook stage As compared with the conventional thing, pretreatment actuation of

there being nothing so then and making a seasoning a material-list side adhering to homogeneity extremely Simplicity, And it can carry out now promptly and the operability at the time of the cooking is improved notably, and it is the point referred to as having made it possible to implementation-ize certainly simple and quick cooking which the microwave oven cooking technique originally makes the target, and has the exceptional description which is not seen by the conventional product.

[0032] With in addition, heating to the surface section from the interior of an ingredient according to microwave when the property of the seasoning for microwave oven cooking of this invention and operation which bring about such effectiveness were explained further and it heats with a microwave oven The salt and the amino acid which were made to adhere to homogeneity on the surface of an ingredient heighten the electric-wave absorptive power of a material-list surface part, and since the heating condition from a material-list surface part to the interior can also be acquired and heating effectiveness can be improved by it, the whole ingredient can be heated uniformly and promptly.

[0033] Moreover, a saccharide also has some electric-wave absorption while giving gloss on the surface of a product, when browning by sugar, amino acid, and the sugar independent occurs. Moreover, although used also at the time as what has a formation function, starch and/or cereals can obtain simple and promptly Mr. frying without coating's so-called product as compared with the case of an independent activity, when the clothes concerned are made to adhere in the form used together with each above mentioned component.

[0034] Furthermore, curdlan has the operation which raises the binding property of the whole ingredient by gelation while having the property to melt into hot water by not melting into water but heating before heating. In this case, while the curdlan which is a thermal coagulation nature gelling agent gels at the temperature which it says is 70-100 degrees C (skin temperature does not become in 100 degrees C or more in microwave oven cooking by the conventional method.) and holds the clothes of a material-list side firmly rather than the usual thermal coagulation nature proteins (an albumen, albumin, wheat flour, etc.), it has the operation which prevents isolation of water-repelling from an ingredient, bouillon, etc.

[0035] Furthermore, in this invention, according to not only the binding property concerned but this invention persons' knowledge, when the curdlan concerned was blended, the adhesion to the cookware at the time of cooking of the seasoning for microwave oven cooking of this invention, a package bag, etc. was controlled, and it turned out that the property of improving the operability at the time of cooking notably is acquired. Therefore, if the seasoning for microwave oven cooking of this invention is used, it will become possible to produce the seasoning concerned commercially with the activity gestalt of the simple form which it comes to combine with a proper package bag.

[0036] The result verified by the example of a trial, next the example of a trial concretely about the operation effectiveness of the seasoning for microwave oven cooking of this invention is shown.

(1) It investigated by measuring the dielectric constant showing the size of the electrical energy conserved when heating by the microwave oven of ingredients, such as measurement salt, amino acid (MSG), various food, etc. of the dielectric constant by the microwave oven of ingredients, such as salt, amino acid, and various food, (heating carried out easy etc.), is carried out and easy is impressed to electric field by the matter, and the electrical energy lost by generation of heat etc.

[0037] A table 1 shows the result of having asked for the dielectric constant by measuring the amount of echoes of the electric field which turn to the ingredient concerned at the time of heating the above-mentioned ingredient with the microwave whose frequency is 2450MHz about a dielectric constant with the probe kit for HP85070A dielectric measurement (the product made from Hewlett Packard, U.S.). inside of table, and ϵ' — specific inductive capacity — ϵ'' — a ratio -- dielectric loss -- moreover, $\tan\delta$ expresses a dielectric loss angle, respectively. in this case, the force (the electric ease of incorporating) in which the specific inductive capacity of ϵ' conserves energy — the ratio of ϵ'' — extent (heating carried out easy) to which dielectric loss changes energy to heat — moreover, the dielectric loss angle of $\tan\delta$ is shown as what expresses the little (so changeable with heat that it is large) of energy loss, respectively. Consequently, as shown in a table 1, it turned out that the soy sauce (HKP) containing salt and amino acid, brine (10%), and an amino acid (MSG) water solution (5%) have high specific inductive capacity.

[0038]
[A table 1]

表1 各種食品の誘電率

			ϵ'	ϵ''	$\tan \delta$	n
肉類	牛肉	サーロイン	32.553	9.658	0.2967	4
		モモ赤身1	53.435	17.018	0.3185	4
		モモ赤身2	48.102	15.382	0.3198	10
	豚肉	肩ロース(脂身無し)	58.533	16.245	0.3035	4
		肩ロース(脂身付き)	29.075	8.583	0.2955	4
		モモ赤身1	55.168	16.128	0.2923	4
		モモ赤身2	52.640	16.526	0.3139	10
		モモ脂肪部	9.398	2.147	0.2285	10
	鶏肉	皮なし胸肉	52.964	17.273	0.3261	10
		皮なしモモ肉	54.664	16.417	0.3003	10
	魚肉	ブリ切り身	30.162	9.737	0.3228	10
		ブリ血合い肉	24.652	6.339	0.2571	10
野菜	ジャガイモ(男爵)		56.480	16.665	0.2951	4
		(メークイン)	65.147	18.795	0.2885	4
	サツマイモ		48.237	14.533	0.3013	4
	大根		56.418	10.830	0.1920	4
	人参		68.750	20.160	0.3020	4
果物	りんご(ふじ)		56.560	10.835	0.1916	4
	パイナップル		66.665	14.533	0.2180	4
液体	イオン交換水		77.297	9.516	0.1231	10
	濃口醤油(HK P)		43.830	98.648	2.2507	10
	食塩水(10%)		57.691	107.036	1.8553	10
	MSG水溶液(5%)		75.223	23.850	0.3171	10
	(10%)		72.145	34.199	0.4740	10
気体	空気		0.996	-0.005	-0.0050	10

[0039] (2) The result of having measured distribution of a dielectric constant and dielectric loss is shown in drawing 1 about the dielectric constant of various ingredients, the distribution various food (meat, vegetables, fruit) of dielectric loss and water, air, and the seasoning for microwave oven cooking of this invention. it is shown in drawing 1 -- as -- the seasoning for microwave oven cooking of this invention -- other various food and water, and air -- comparing -- a high ratio -- it turned out that they are dielectric loss and the thing which has specific inductive capacity.

[0040] (3) the ratio by the seasoning for microwave oven cooking of this invention -- the ratio at the time of processing the pig peach lean of a food ingredient using the seasoning for microwave oven cooking (seasoning powder) of measurement this invention of the improvement effectiveness in dielectric loss (heating carried out easy) -- the result of having measured dielectric loss is shown in drawing 2 as compared with the case of not processing. processing with the seasoning for microwave oven cooking of this invention (seasoning powder), as shown in drawing 2 -- a ratio -- dielectric loss improved notably and it was checked that there is the so-called operation effectiveness of it being heated and raising easy.

[0041] (4) Cookware, a package bag, and the other adhesive improvement effects of the curdlan to which are hard to adhere and outstanding operating characteristics are made to give were examined by the following approaches in the comparison with other thickening polysaccharide about the seasoning for microwave oven cooking of adhesion loss comparative study this invention. That is, other raw material combination prepares the seasoning prepared like the example 2, respectively, and as it prepared three sorts of things which paid the ingredients cooked to a plastic bag, contained the above-mentioned seasonings of each in the plastic bag, respectively and shook the whole lightly, it made the seasoning to add curdlan, xanthan gum, and gellan gum to a plastic bag, and adhere to an ingredient. [0042] Then, it compared with the ullage of other seasonings, having measured the seasoning which remained into the plastic bag, without taking out an ingredient out of a plastic bag and being able to adhere to an ingredient, and having used as 1 ullage in the plastic bag of the seasoning which added curdlan (fly off extent). Moreover, it compared with the coating weight to the pan of other seasonings, having used coating weight of the seasoning to the pan at the time of putting an ingredient on a pan as 1 so that an ingredient might be taken out out of a plastic bag and microwave oven cooking could be performed. In addition, such ullage and coating weight were computed by measuring such weight. [0043] Consequently, as shown in drawing 3, as compared with other thickening polysaccharide, about both adhesion extent to a plastic bag, and adhesion extent to a pan, it was low, the adhesion loss, i.e., fly off extent, of curdlan, and it was checked that the adhesive improvement effect which the curdlan in the seasoning for microwave oven cooking of this invention has is excellent.

[0044]

[Example] Next, although this invention is concretely explained based on an example, this invention is not limited only to the example concerned.

It mixed with curdlan 4.2g of 7g of saccharides of 42g of powdered soy sauce containing 13.5g of example 1(1) raw-material combination salt, and 0.6g of amino acid, and the powder gestalt which consists of sucrose, and a granulation gestalt, and the seasoning for microwave oven cooking of the shape of powder of this invention was prepared.

[0045] (2) cooking of the teriyaki Mr. product of the fish by the microwave oven -- as buri [7.5g of seasonings for microwave oven cooking prepared as mentioned above and 100g / of sliced] was contained in the transparence package bag made from vinyl and the whole was often shaken, as the seasoning concerned was uniformly sprinkled on the front face of sliced buri, it was made to adhere to homogeneity Subsequently, the teriyaki Mr. product which has eye a burn carried out cooking with the usual frying pan etc., and it carried out beautifully brown, and gloss was obtained by putting cut fish into ejection and a dished container, carrying out a lap, and carrying out cooking for 2 minutes with the skin temperature of 70-100 degrees C with a microwave oven (500W) as it is.

[0046] It mixed with 7.93g of starch and 37g of wheat flour which consists of curdlan 9g of 24g of saccharides of 17g of powdered soy sauce containing 5.5g of example 2(1) raw-material combination salt, and 0.25g of amino acid, and the powder gestalt which consists of sucrose, and a powder gestalt, and a potato, and the seasoning for microwave oven cooking of the shape of powder of this invention was prepared.

[0047] (2) cooking of the frying-without-coating Mr. product by the microwave oven -- as the seasonings 7-10g for microwave oven cooking prepared as mentioned above and pork [100g / of sliced] were contained in the transparence package bag made from vinyl and the whole was often shaken, as the seasoning concerned was uniformly sprinkled on the front face of sliced chicken, it was made to adhere to homogeneity Subsequently, the frying-without-coating Mr. product which has eye a burn carried out cooking with the usual frying pan etc., and it carried out beautifully brown, and gloss was obtained by putting cut fish into ejection and a dished container, carrying out a lap, and carrying out cooking for 2 minutes with the skin temperature of 70-100 degrees C with a microwave oven (500W) as it is.

[0048] (3) It heated for 2 minutes with the microwave oven (500W) further, and sweet-and-sour pork was made without carrying out a lap, after mixing the whole lightly, having poured the source containing a sweet-and-sour pork tool which once prepared separately the frying-without-coating Mr.

product of the pork which is the cooking above of sweet-and-sour pork, and was made and cooked in the dished container at ejection and this.

[0049]

[Effect of the Invention] the powdered soy sauce in which this invention contains salt, amino acid, or salt and amino acid as explained in full detail above, a saccharide, and curdian -- further According to this invention, about the seasoning for microwave oven cooking characterized by coming to contain starch and/or the farina By adding the above-mentioned seasoning into ingredients, such as meat and a fish, and cooking with a microwave oven, isolation of water-repelling from the ingredient which is the fault of microwave oven cooking, bouillon, etc. is prevented, and soft mouthfeel and the taste of ingredient original can be maintained.

[0050] Moreover, eye the burn and gloss equivalent to what carried out cooking with the usual frying pan etc. which were carried out beautifully brown can be given. Furthermore, while being able to perform cooking cookware, a package bag, since [other] it is hard to adhere, after it can sprinkle the powder of a seasoning simple and promptly uniformly to ingredient each, and the powder moreover sprinkles a seasoning on an ingredient by hand in a package bag for example, until it heats with a microwave oven smoothly and simple, an ingredient can be roasted to homogeneity.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention is a thing about the seasoning for microwave oven cooking useful although it adds into ingredients, such as meat and a fish, and being cooked with a microwave oven. In more detail While preventing isolation of water-repelling from the ingredient concerned at the time of cooking made into the fault of microwave oven cooking, bouillon, etc. generally and maintaining soft mouthfeel and the taste of ingredient original It is related with the seasoning [it is possible to give eye the burn equivalent to what carried out cooking with the usual frying pan etc. carried out beautifully brown, and gloss to the front face of cooking food, and] for microwave oven cooking which can moreover improve the operability at the time of cooking notably with the property.

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PRIOR ART

[Description of the Prior Art] While various cooking techniques and cookware are put in practical use and spreading in recent years with installation of the high-tech technique to meal industry, and development of the innovative cooking technique centering on it, it is safe, and the spread of the microwave ovens which moreover have simplicity, and development of the cooking technique by microwave heating have a remarkable thing, and are in the inclination which various kinds of researches and development competition of a microwave oven cooking product activate in for home use and business-use both.

[0003] Thus, while research and development of the cooking technique by the microwave oven and a related product activate The food related product for microwave oven cooking is also attaining to an extensive field. The former, Also in the microwave oven and microwave heating technique which are used as a core, the food for microwave oven cooking of dedication reaches thawing of common frozen foods, and quick cooking of food for developing chiefly. In current [the cake premix for microwave oven cooking by which the application field had been amplification-ized by leaps and bounds, for example, the class of food for microwave oven cooking was also developed at the beginning to] Commercial production of very broad food is performed and the example of development of a variety of products and a processing technique is reported in the field concerned until now until it results in a tempura product, fry food, snacks, meat and a fish-and-shellfishes product, a deep-fried-dishes product, etc.

[0004] It is in such various kinds of food for microwave oven cooking, it divides, and if some old examples of development are given in instantiation about the food for microwave oven cooking centering on ingredients to which this invention persons came as a development target, such as meat and a fish, and the food relevant to it, the following will be raised as the typical thing.

[0005] namely, conventionally as a thing about fly food first as a thing about the fly food immediately after proposing various kinds of products and processes, for example, carrying out an oil butterfly, and the fly food for microwave oven cooking with which same mouthfeel is obtained After a food raw material is immersed in the batter who consists of the wheat flour which carried out pneumatic with the frothing agent which has thermal coagulation nature, water, and a seasoning, The manufacture approach of the frozen fly food for microwave oven cooking which bread crumbs are made to adhere, carries out an oil butterfly, and is characterized by freezing (JP,64-60334,A), moreover, as a thing about the fly food which there is almost no water-repelling after thawing, and does not have debasement even if it carries out long duration preservation The manufacturing method of the fly food clothes material characterized by carrying out microwave heating after attaching the batter liquid which becomes sponge dough from raw starch etc. and carrying out the cliff also of the roller (JP,59-162844,A), moreover, as what offers the fly Mr. food for microwave ovens aiming at realizing the same mouthfeel as the usual just made fly, flavor, a crispy feeling, etc. The fly food for microwave ovens (JP,2-16937,A) characterized by forming the batter layer, the 1st BUREDDA layer, the emulsion layer, and the 2nd BUREDDA layer in the outside of a food base material at least at this order is proposed.

[0006] Moreover, for example, powdered wheat protein, a powdered lactalbumin concentrate, corn

flour, the dusting powder combination article for tempura (JP,4-187058,A) characterized by including at least three in corn starch are proposed as a thing about the tempura product for microwave oven cooking.

[0007] moreover, as a thing aiming at offering the food which has an appearance and mouthfeel same with having carried out deep-fried tofu only by carrying out cooking with a microwave oven as a thing about a frying-without-coating product Difficulty hydration particulate matters, such as coarse-granulated material of nuts, and high protein powder, such as albumen powder and wheat protein powder, The mix powder for frying without coating characterized by containing the farina and/or starch, and a coloring agent (JP,63-233751,A), moreover, lift and the appearance of stage fright as a thing aiming at it being desirable and obtaining the bad smell of meat, and the mix powder for frying without coating which lifts and does not have the bad smell of clothes The mix powder for frying without coating (JP,4-187059,A) characterized by including monosaccharide, casein, a dried albumen, amino acid, the leaf of the ground tea, and powdered soy sauce is proposed.

[0008] furthermore, as a thing aiming at obtaining the cooking food of the fish and shellfishes which carried out the baking color equivalent to the pottery which carried out cooking with the usual frying pan etc. In case cooking of the fish and shellfishes which are not cooked [cooking or] or its workpiece is wrapped and carried out with Japanese paper etc. After adjusting the moisture of these fish and shellfishes or the workpiece of those to extent out of which a drip does not come at the time of heating The coating liquid containing saccharides, such as a xylose and a glucose, is applied to the front face, and the cooking manufacture approach (JP,63-296667,A) of the fish and shellfishes characterized by carrying out dielectric heating of fish and shellfishes or its workpiece with a microwave oven through said Japanese paper etc. after that etc. is proposed.

[0009] Thus, the example of development of the food for microwave oven cooking for ingredients, such as meat and a fish It is various and for example, a frozen deep-fried-dishes product is thawed in these. Only not only in the thing about the so-called general microwave oven thawing and so-called general heating aiming at obtaining the product which heats and does not have inferiority in the usual deep-fried-dishes product, with for example, microwave oven cooking Although the thing aiming at giving an appearance equivalent to the usual deep-fried-dishes product and a pottery product, flavor, mouthfeel, etc. is also proposed So that it may see for the example of the above mentioned mix powder for frying without coating, for example, even if it is in the latter Even if it is restricted to the thing of the specific presentation for a specific product, and the improvement target is moreover also almost restricted to the thing consisting mainly of the appearance of a product, flavor, mouthfeel, etc., therefore it sees the conventional example of development The actual condition was that what has made reference about problems, such as an adhesive improvement to an improvement of the operability at the time of cooking which this invention makes one target, cookware, a package bag, etc., is not found at all.

[0010] On the other hand, about the curdlan currently used as an indispensable component in this invention, so that a postscript may be carried out Conventionally, generally, as a gelling agent of food, although it is used for development of various products for the purpose of the improvement in [, such as the gelation nature of various food, and a texture,] physical properties and the example of development is also various If it is in it and some of the typical thing is illustrated, as what forms in the front face of fishery ***** the coat which was thin and became brave, for example As what offers fishery ***** (JP,2-79961,A) which it comes to cover with the gel film of curdlan and roast fish, and the preservation food which lifted and covered the front face of food, such as fly, with the ordinary temperature coagulation film The preservation food (JP,3-61454,A) covered with the ordinary temperature coagulation film which adheres the dispersion liquid of curdlan to food, is made to carry out thermal coagulation of the curdlan in a heating ambient atmosphere, and is characterized by covering the front face of food with curdlan is proposed.

[0011] moreover, as what uses for microwave heating cooking food the various functions which curdlan has Food for microwave heating cooking, such as a jelly [which comes to contain curdlan], bean jam and confectionary, extempore noodles, and egg workpiece (JP,2-411,A), Moreover, the food for microwave heating cooking (JP,2-124066,A) which comes to contain curdlan in the container for

heating is proposed as what offers cooking food, such as hot jelly with good quality without the heating nonuniformity by the microwave oven.

[0012] These things are restricted to that for which the most used functions, such as gelation nature which curdlan has, texture amelioration nature, a binding property, water retention, and heating freezing characteristic, as they were. However, also about the curdlan concerned The actual condition was that what has made reference about problems, such as an adhesive improvement to an improvement of the operability at the time of cooking which this invention makes one target, cookware, a package bag, etc., is not found at all.

[0013] Thus, although the food for microwave oven cooking is developed variously conventionally The thing about the individual technique [all] for a specific product, mouthfeel, The thing centering on the improvement flavor and in physical properties etc. is most, and it divides. It is the baking product and frying-without-coating Mr. product using ingredients, such as meat and a fish. The usual heating, About the microwave oven cooking processing technique which can give heating equivalent to the product which performed baking cooking, and the baking effectiveness to a product In the product which the example of development is restricted and moreover used ingredients, such as the conventional meat and a fish There is much what has troubles, like actual cooking takes time and effort and time amount including the pretreatment. therefore, it not only can make the appearance of a product which was described above, flavor, mouthfeel, etc. to a thing equivalent to the usual cooking product, but The operability at the time of cooking which is the original target of microwave oven cooking has been improved, and developing the raw material for microwave oven cooking which can be cooked simple and promptly, a product, and a processing technique suited the situation currently strongly demanded in this industry.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the Invention] the powdered soy sauce in which this invention contains salt, amino acid, or salt and amino acid as explained in full detail above, a saccharide, and curdlan -- further According to this invention, about the seasoning for microwave oven cooking characterized by coming to contain starch and/or the farina By adding the above-mentioned seasoning into ingredients, such as meat and a fish, and cooking with a microwave oven, isolation of water-repelling from the ingredient which is the fault of microwave oven cooking, bouillon, etc. is prevented, and soft mouthfeel and the taste of ingredient original can be maintained.

[0050] Moreover, eye the burn and gloss equivalent to what carried out cooking with the usual frying pan etc. which were carried out beautifully brown can be given. Furthermore, while being able to perform cooking cookware, a package bag, since [other] it is hard to adhere, after it can sprinkle the powder of a seasoning simple and promptly uniformly to ingredient each, and the powder moreover sprinkles a seasoning on an ingredient by hand in a package bag for example, until it heats with a microwave oven smoothly and simple, an ingredient can be roasted to homogeneity.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] While this invention persons solve the conventional trouble which was described above based on such a situation Only by cooking the cooking product which consists of ingredients, such as meat and a fish, with a microwave oven, the usual heating, It not only has an appearance equivalent to the product manufactured by the baking cook stage, flavor, mouthfeel, etc., but Target simple nature [the operability at the time of the cooking concerned is improved, and / technique / microwave oven cooking] originally, As a result of repeating research wholeheartedly for the purpose of developing the new cooking raw material which can cook quick nature in the form employed efficiently as it was, a product, and a cooking technique, with the component property By using the seasoning for microwave oven cooking which consists of specific presentation and the property that the operability at the time of cooking can be improved notably, while it is possible to heighten the electric-wave absorptive power in the surface section of a product, and to raise the heating effectiveness It finds out that the desired end can be attained and came to complete this invention.

[0015] Namely, by adding into ingredients, such as meat and a fish, and cooking with a microwave oven, this invention prevents certainly isolation of water-repelling from the ingredient concerned it was presupposed that it was the fault of microwave oven cooking, bouillon, etc., and aims at offering the seasoning for microwave oven cooking which can maintain soft mouthfeel and the taste of ingredient original conventionally.

[0016] Moreover, this invention aims at offering the seasoning for microwave oven cooking which can give eye the burn equivalent to what carried out cooking with the usual frying pan etc. carried out beautifully brown, and gloss by cooking ingredients, such as meat and a fish, with a microwave oven.

[0017] Moreover, this invention aims at offering the seasoning for microwave oven cooking which can prevent isolation of water-repelling from an ingredient, bouillon, etc. certainly while it makes it possible to hold the clothes of the front face of ingredients, such as meat and a fish, firmly rather than the case where thermal coagulation nature proteins, such as an albumen, albumin, and wheat flour, are used.

[0018] Furthermore, this invention can sprinkle the powder of a seasoning uniformly to ingredient each. And while being able to perform cooking after there is effectiveness remarkable in the powder preventing cookware, in addition adhering and sprinkling a seasoning on an ingredient by hand until it heats with a microwave oven very smoothly and simple It aims at offering the seasoning for microwave oven cooking which has the outstanding property referred to as being able to roast an ingredient to homogeneity.

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MEANS

[Means for Solving the Problem] This invention for attaining such an object consists of technical means of following (1) - (2).

(1) The powdered soy sauce containing salt, amino acid, or salt and amino acid, a saccharide, and the seasoning for microwave oven cooking characterized by coming to contain curdlan.

[0020] (2) The seasoning for microwave oven cooking characterized by coming to contain the powdered soy sauce containing salt, amino acid, or salt and amino acid, a saccharide, curdlan and starch, and/or cereals.

[0021] Then, this invention is further explained to a detail. this invention -- said powdered soy sauce which contains salt, amino acid, or salt and amino acid as carried out, a saccharide, and curdlan -- further It is a thing about the seasoning for microwave oven cooking characterized by coming to contain starch and/or cereals. It is a thing about the seasoning product for microwave oven cooking useful although it adds into ingredients, such as meat and a fish, and especially being cooked with a microwave oven. In this case as a final product Although products, such as yakitori, teriyaki of buri, and the Tatsuta **** of mackerel, will be illustrated as a typical thing if the baking product which calcinated the so-called meat or the so-called fish as it was, a teriyaki Mr. product, the frying-without-coating Mr. product which added and calcinated clothes are said still more concretely If it is the thing of equivalent not only to this but these, or resemblance, regardless of the class, it can consider as an object. Therefore, including meat and fish and shellfishes, ingredients as used in the field of this invention, such as meat and a fish, are the things of equivalent to it, or resemblance, and let them be objects regardless of the class and gestalt.

[0022] Next, as the latter of the powdered soy sauce containing the salt which is the indispensable component of the seasoning for microwave oven cooking of this invention, amino acid, or salt and amino acid, if salt and amino acid concerned are contained like the powder workpiece of liquefied soy sauce etc., it is not restricted especially and can be used regardless of the class. Moreover, the powdered soy sauce concerned as used in the field of this invention is defined as a thing also containing the synthetic compounds of this effect. Moreover, although independent or the things which were used together, such as monosaccharide, two saccharides, three saccharides, an oligosaccharide, and sugar-alcohol, are illustrated as a saccharide, a glucose, fructose, sucrose, a maltose, starch syrup hydrolyzate, an oligosaccharide, etc. are used suitably.

[0023] Moreover, the curdlan used by this invention can use the powder of usual curdlan which is generally known as heating freezing characteristic polysaccharide which makes a subject beta-1 and 3-glycoside linkage, and is known as what the bacillus of Alcaligenes and the AKURO Bacterium etc. produces, a granulation product, etc.

[0024] Furthermore, if it is the usual starch and cereals which are used as the so-called clothes material of frying without coating as the starch blended as one mode of this invention, and/or cereals, it can be used regardless of the class, for example, corn starch, potato starch, sweet potato starch, wheat flour, U.S. rice flour, rice flour, etc. will be raised.

[0025] Although the seasoning for microwave oven cooking of this invention is used for ingredients into

which the above mentioned proper gestalt was processed beforehand, such as meat and a fish, in the form added directly In that case, while making the seasoning concerned adhere to the surface section simple and promptly at homogeneity In order to make it possible to control certainly the adhesion through which it passes and to improve the operability at the time of cooking notably, cookware etc. It is important to blend said curdlan as an indispensable component into the seasoning concerned, for example, even if it uses the heating freezing characteristic gelling agent of resemblance of others, such as carrageenan and gellant gum, such effectiveness is not acquired and the desired end cannot be attained.

[0026] Moreover, in this case, in order to make the operability at the time of cooking improve as described above, if it is the thing of equivalent or resemblance, it is employable [the seasoning for microwave oven cooking of this invention] with it being powdered, although gestalten, such as powder and granularity, are used for them as that gestalt, processing it suitably.

[0027] Although the seasoning for microwave oven cooking of this invention is manufactured by blending the powdered soy sauce which contains salt which was described above, amino acid, or salt and amino acid as the 1st mode, a saccharide, and curdlan into a raw material The raw material combination in that case is raised considering the powdered soy sauce containing the 4.16 to salt 28 section, the 0.18 to amino acid 1.2 section or salt, and amino acid as what has suitable making the 13 to 79 section, and a saccharide into the seven to 36 section, and making curdlan into the four to 27 section.

[0028] Moreover, although the seasoning for microwave oven cooking of this invention is manufactured by blending the powdered soy sauce which contains salt which was described above, amino acid, or salt and amino acid as the 2nd mode, a saccharide, curdlan and starch, and/or cereals into a raw material The raw material combination in that case the powdered soy sauce containing the 3.3 to salt 12 section, the 0.13 to amino acid 1.11 section or salt, and amino acid The nine to 33.3 section, Making a saccharide into the 11 to 36 section, and making the 1.5 to 21 section, starch, and/or cereals into the 36 to 75 section for curdlan is raised as a suitable thing.

[0029] Although the approach of the concrete approach of raw material combination carrying out package mixing with usual powder-mixing equipment, for example, a V type mixer, a ribbon mixer, etc. is illustrated in these cases, in addition to the basic-raw-materials component which could carry out sequential combination not only of this but these, and was described above, other raw material components may be added. Thus, although the seasoning for microwave oven cooking of this invention manufactured is added with a proper means into ingredients, such as meat of the above mentioned proper gestalt, and a fish, and it is made adhere, made and used for the surface section by homogeneity In this case, meat or the slice piece of a fish is contained in proper package bags, such as for example, a plastic wrapping bag, with the seasoning for microwave oven cooking of this invention, and if the whole is shaken lightly, homogeneity can be made for the seasoning concerned to adhere to the front face of the slice piece concerned simple and promptly. Thus, the seasoning for microwave oven cooking of this invention has the advantage which has an adhesive problem to a package bag and does not have the implementation-ization in the difficult conventional product at the point which can be used combining a proper package bag.

[0030] Thus, after adding the seasoning for microwave oven cooking of this invention on the surface of an ingredient, while isolation of water-repelling from the ingredient concerned conventionally made into the fault of microwave oven cooking, bouillon, etc. is certainly prevented by cooking with a microwave oven Eye the burn and gloss equivalent to what carried out cooking with the usual frying pan etc. which were carried out beautifully brown can be given, and soft mouthfeel and the taste of ingredient original can be maintained by this. In addition, in this case, the seasoning for microwave oven cooking of this invention does not need to say that it is what can be used regardless of that class, if it is microwave heating cooking equipment equivalent to a microwave oven.

[0031] As mentioned above, although the seasoning for microwave oven cooking of this invention can give the appearance of a final product, flavor, mouthfeel, etc. on level equivalent to what was cooked in the usual heating and a cook stage As compared with the conventional thing, pretreatment actuation of there being nothing so then and making a seasoning a material-list side adhering to homogeneity

extremely Simplicity, And it can carry out now promptly and the operability at the time of the cooking is improved notably, and it is the point referred to as having made it possible to implementation-ize certainly simple and quick cooking which the microwave oven cooking technique originally makes the target, and has the exceptional description which is not seen by the conventional product.

[0032] With in addition, heating to the surface section from the interior of an ingredient according to microwave when the property of the seasoning for microwave oven cooking of this invention and operation which bring about such effectiveness were explained further and it heats with a microwave oven The salt and the amino acid which were made to adhere to homogeneity on the surface of an ingredient heighten the electric-wave absorptive power of a material-list surface part, and since the heating condition from a material-list surface part to the interior can also be acquired and heating effectiveness can be improved by it, the whole ingredient can be heated uniformly and promptly.

[0033] Moreover, a saccharide also has some electric-wave absorption while giving gloss on the surface of a product, when browning by sugar, amino acid, and the sugar independent occurs. Moreover, although used also at the time as what has a formation function, starch and/or cereals can obtain simple and promptly Mr. frying without coating's so-called product as compared with the case of an independent activity, when the clothes concerned are made to adhere in the form used together with each above mentioned component.

[0034] Furthermore, curdlan has the operation which raises the binding property of the whole ingredient by gelation while having the property to melt into hot water by not melting into water but heating before heating. In this case, while the curdlan which is a thermal coagulation nature gelling agent gels at the temperature which it says is 70-100 degrees C (skin temperature does not become in 100 degrees C or more in microwave oven cooking by the conventional method.) and holds the clothes of a material-list side firmly rather than the usual thermal coagulation nature proteins (an albumen, albumin, wheat flour, etc.), it has the operation which prevents isolation of water-repelling from an ingredient, bouillon, etc.

[0035] Furthermore, in this invention, according to not only the binding property concerned but this invention persons' knowledge, when the curdlan concerned was blended, the adhesion to the cookware at the time of cooking of the seasoning for microwave oven cooking of this invention, a package bag, etc. was controlled, and it turned out that the property of improving the operability at the time of cooking notably is acquired. Therefore, if the seasoning for microwave oven cooking of this invention is used, it will become possible to produce the seasoning concerned commercially with the activity gestalt of the simple form which it comes to combine with a proper package bag.

[0036] The result verified by the example of a trial, next the example of a trial concretely about the operation effectiveness of the seasoning for microwave oven cooking of this invention is shown.

(1) It investigated by measuring the dielectric constant showing the size of the electrical energy conserved when heating by the microwave oven of ingredients, such as measurement salt, amino acid (MSG), various food, etc. of the dielectric constant by the microwave oven of ingredients, such as salt, amino acid, and various food, (heating carried out easy etc.), is carried out and easy is impressed to electric field by the matter, and the electrical energy lost by generation of heat etc.

[0037] A table 1 shows the result of having asked for the dielectric constant by measuring the amount of echoes of the electric field which turn to the ingredient concerned at the time of heating the above-mentioned ingredient with the microwave whose frequency is 2450MHz about a dielectric constant with the probe kit for HP85070A dielectric measurement (the product made from Hewlett Packard, U.S.). inside of table, and ϵ' -- specific inductive capacity -- ϵ'' -- a ratio -- dielectric loss -- moreover, $\tan\delta$ expresses a dielectric loss angle, respectively. in this case, the force (the electric ease of incorporating) in which the specific inductive capacity of ϵ' conserves energy -- the ratio of ϵ'' -- extent (heating carried out easy) to which dielectric loss changes energy to heat -- moreover, the dielectric loss angle of $\tan\delta$ is shown as what expresses the little (so changeable with heat that it is large) of energy loss, respectively. Consequently, as shown in a table 1, it turned out that the soy sauce (HKP) containing salt and amino acid, brine (10%), and an amino acid (MSG) water solution (5%) have high specific inductive capacity.

[0038]

[A table 1]

表1 各種食品の誘電率

			ϵ'	ϵ''	$\tan \delta$	n
肉類	牛肉	サーロイン	32.553	9.658	0.2967	4
		モモ赤身1	53.435	17.018	0.3185	4
		モモ赤身2	48.102	15.382	0.3198	10
	豚肉	肩ロース(脂身無し)	53.533	16.245	0.3035	4
		肩ロース(脂身付き)	29.075	8.593	0.2955	4
		モモ赤身1	55.168	16.128	0.2923	4
		モモ赤身2	52.640	16.526	0.3199	10
		モモ脂肪部	9.398	2.147	0.2285	10
	鶏肉	皮なし胸肉	52.964	17.273	0.3261	10
		皮なしモモ肉	54.664	18.417	0.3003	10
	魚肉	ブリ切り身	30.162	9.797	0.3228	10
		ブリ血合い肉	24.652	6.339	0.2571	10
野菜	ジャガイモ(男爵)		56.480	16.685	0.2951	4
		(メークイン)	65.147	18.795	0.2885	4
	サツマイモ		48.237	14.533	0.3013	4
	大根		56.418	10.830	0.1920	4
	人参		68.750	20.160	0.3020	4
果物	りんご(ふじ)		56.560	10.835	0.1916	4
	パイナップル		66.665	14.533	0.2180	4
液体	イオン交換水		77.287	9.516	0.1231	10
	濃口醤油(HK P)		43.830	98.648	2.2507	10
	食塩水(10%)		57.691	107.036	1.8553	10
	MSG水溶液(5%)		75.223	23.850	0.3171	10
	(10%)		72.145	34.199	0.4740	10
気体	空気		0.996	-0.005	-0.0050	10

[0039] (2) The result of having measured distribution of a dielectric constant and dielectric loss is shown in drawing 1 about the dielectric constant of various ingredients, the distribution various food (meat, vegetables, fruit) of dielectric loss and water, air, and the seasoning for microwave oven cooking of this invention. it is shown in drawing 1 -- as -- the seasoning for microwave oven cooking of this invention -- other various food and water, and air -- comparing -- a high ratio -- it turned out that they are dielectric loss and the thing which has specific inductive capacity.

[0040] (3) the ratio by the seasoning for microwave oven cooking of this invention -- the ratio at the time of processing the pig peach lean of a food ingredient using the seasoning for microwave oven cooking (seasoning powder) of measurement this invention of the improvement effectiveness in dielectric loss (heating carried out easy) -- the result of having measured dielectric loss is shown in drawing 2 as compared with the case of not processing. processing with the seasoning for microwave oven cooking of this invention (seasoning powder), as shown in drawing 2 -- a ratio -- dielectric loss improved notably and it was checked that there is the so-called operation effectiveness of it being heated and raising easy.

[0041] (4) Cookware, a package bag, and the other adhesive improvement effects of the curdlan to

which are hard to adhere and outstanding operating characteristics are made to give were examined by the following approaches in the comparison with other thickening polysaccharide about the seasoning for microwave oven cooking of adhesion loss comparative study this invention. That is, other raw material combination prepares the seasoning prepared like the example 2, respectively, and as it prepared three sorts of things which paid the ingredients cooked to a plastic bag, contained the above-mentioned seasonings of each in the plastic bag, respectively and shook the whole lightly, it made the seasoning to add curdlan, xanthan gum, and gellan gum to a plastic bag, and adhere to an ingredient. [0042] Then, it compared with the ullage of other seasonings, having measured the seasoning which remained into the plastic bag, without taking out an ingredient out of a plastic bag and being able to adhere to an ingredient, and having used as 1 ullage in the plastic bag of the seasoning which added curdlan (fly off extent). Moreover, it compared with the coating weight to the pan of other seasonings, having used coating weight of the seasoning to the pan at the time of putting an ingredient on a pan as 1 so that an ingredient might be taken out out of a plastic bag and microwave oven cooking could be performed. In addition, such ullage and coating weight were computed by measuring such weight. [0043] Consequently, as shown in drawing 3, as compared with other thickening polysaccharide, about both adhesion extent to a plastic bag, and adhesion extent to a pan, it was low, the adhesion loss, i.e., fly off extent, of curdlan, and it was checked that the adhesive improvement effect which the curdlan in the seasoning for microwave oven cooking of this invention has is excellent.

[Translation done.]

* NOTICES *

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EXAMPLE

[Example] Next, although this invention is concretely explained based on an example, this invention is not limited only to the example concerned.

It mixed with curdlan 4.2g of 7g of saccharides of 42g of powdered soy sauce containing 13.5g of example 1(1) raw-material combination salt, and 0.6g of amino acid, and the powder gestalt which consists of sucrose, and a granulation gestalt, and the seasoning for microwave oven cooking of the shape of powder of this invention was prepared.

[0045] (2) cooking of the teriyaki Mr. product of the fish by the microwave oven -- as buri [7.5g of seasonings for microwave oven cooking prepared as mentioned above and 100g / of sliced] was contained in the transparence package bag made from vinyl and the whole was often shaken, as the seasoning concerned was uniformly sprinkled on the front face of sliced buri, it was made to adhere to homogeneity Subsequently, the teriyaki Mr. product which has eye a burn carried out cooking with the usual frying pan etc., and it carried out beautifully brown, and gloss was obtained by putting cut fish into ejection and a dished container, carrying out a lap, and carrying out cooking for 2 minutes with the skin temperature of 70-100 degrees C with a microwave oven (500W) as it is.

[0046] It mixed with 7.93g of starch and 37g of wheat flour which consists of curdlan 9g of 24g of saccharides of 17g of powdered soy sauce containing 5.5g of example 2(1) raw-material combination salt, and 0.25g of amino acid, and the powder gestalt which consists of sucrose, and a powder gestalt, and a potato, and the seasoning for microwave oven cooking of the shape of powder of this invention was prepared.

[0047] (2) cooking of the frying-without-coating Mr. product by the microwave oven -- as the seasonings 7-10g for microwave oven cooking prepared as mentioned above and pork [100g / of sliced] were contained in the transparence package bag made from vinyl and the whole was often shaken, as the seasoning concerned was uniformly sprinkled on the front face of sliced chicken, it was made to adhere to homogeneity Subsequently, the frying-without-coating Mr. product which has eye a burn carried out cooking with the usual frying pan etc., and it carried out beautifully brown, and gloss was obtained by putting cut fish into ejection and a dished container, carrying out a lap, and carrying out cooking for 2 minutes with the skin temperature of 70-100 degrees C with a microwave oven (500W) as it is.

[0048] (3) It heated for 2 minutes with the microwave oven (500W) further, and sweet-and-sour pork was made without carrying out a lap, after mixing the whole lightly, having poured the source containing a sweet-and-sour pork tool which once prepared separately the frying-without-coating Mr. product of the pork which is the cooking above of sweet-and-sour pork, and was made and cooked in the dished container at ejection and this.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the explanatory view showing distribution of the dielectric constant and dielectric loss of various food.

[Drawing 2] the ratio by the seasoning (seasoning powder) processing for microwave oven cooking of this invention -- it is the explanatory view showing the improvement effectiveness in dielectric loss (heated easy).

[Drawing 3] It is the explanatory view showing the result of the adhesion loss comparative study in curdlan and other thickening polysaccharide.

[Translation done.]

* NOTICES *

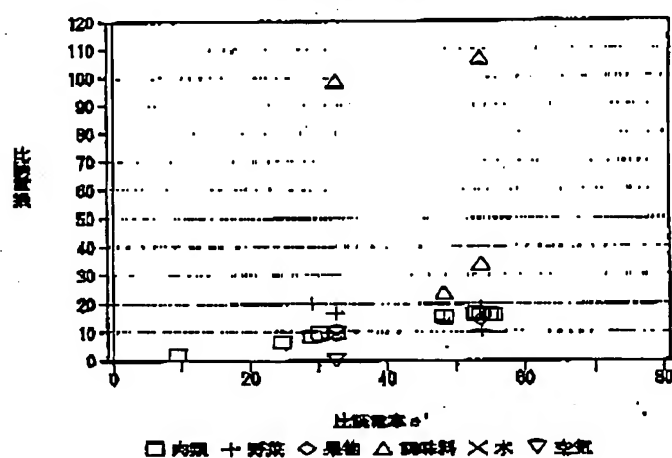
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DRAWINGS

[Drawing 1]

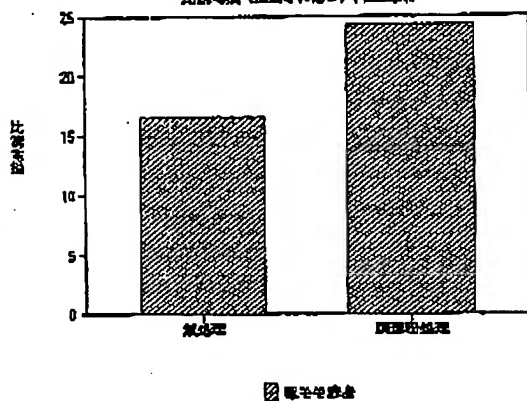
食品の消費率・消費量の分布



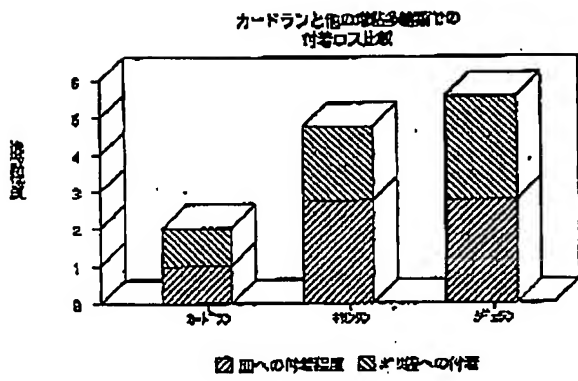
[Drawing 2]

調理方法による

消費電量 (加熱されたもの) 向上効果



[Drawing 3]



[Translation done.]

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(54) 【発明の名称】 電子レンジ調理用調味料

(57) 【要約】

【目的】 電子レンジ調理用調味料を提供する。

【構成】 食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、及びカードランを含有してなる電子レンジ調理用調味料。及び、食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、カードラン、及び澱粉類及び／又は穀類を含有してなる電子レンジ調理用調味料。

【効果】 肉、魚等の材料に上記調味料を添加して電子レンジで調理することにより、電子レンジ調理の欠点である材料からの離水、肉汁等の遊離を防ぎ、やわらかな食感と材料本来の旨味を保つようにすることができる。また、通常のフライパン等で加熱調理したものと同等のこんがりとしたこげめと照りを付与することができる。更に、材料個々に対し均等に調味料の粉を簡便、かつ迅速にまぶすことができ、しかも、その粉が調理器具、その他に付着しにくいいため、手で材料に調味料をまぶしてから電子レンジで加熱するまでの調理作業をスムーズ、かつ簡便に行うことができる。

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【特許請求の範囲】

【請求項1】 食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、及びカードランを含有してなることを特徴とする電子レンジ調理用調味料。

【請求項2】 食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、カードラン、及び澱粉類及び／又は穀類を含有してなることを特徴とする電子レンジ調理用調味料。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、肉、魚等の材料に添加して電子レンジで調理するのに有用な電子レンジ調理用調味料に関するものであり、更に詳しくは、一般に、電子レンジ調理の欠点とされていた調理時における当該材料からの離水、肉汁等の遊離を防ぎ、やわらかな食感と材料本来の旨味を保つようにすると共に、調理食品の表面に通常のフライパン等で加熱調理したものと同様のこんがりとしたこげめと照りを付与することが可能であり、しかも、その特性により調理時における操作性を顕著に改善することが可能な電子レンジ調理用調味料に関するものである。

【0002】

【従来の技術】近年、食産業へのハイテク技術の導入と、それを中心とした革新的な調理技術の発展に伴い、種々の調理技術及び調理器具が実用化され普及する中で、安全で、しかも簡便さを有する電子レンジの普及とマイクロ波加熱による調理技術の発展はめざましいものがあり、家庭用及び業務用の両者において、各種の電子レンジ調理製品の研究及び開発競争が活発化する傾向にある。

【0003】このように、電子レンジによる調理技術及び関連製品の研究及び開発が活発化する中で、電子レンジ調理用食品関連製品も広汎な分野に及びつつあり、従来、もっぱら、一般的な冷凍食品の解凍や食品の迅速加熱調理を中心として利用されてきた電子レンジ及びマイクロ波加熱技術も、専用の電子レンジ調理用食品が開発されるに及んで、その応用領域が飛躍的に拡大化されつつあり、例えば、電子レンジ調理用食品の種類も、当初に開発された電子レンジ調理用ケーキブレミックスから、現在では、天ぷら製品、フライ食品、スナック類、畜肉及び魚介類製品、揚げ物製品等に至るまで、きわめて幅広い食品の製品化が行われており、当該分野においては、これまでに多種多様の製品及び加工技術の開発例が報告されている。

【0004】このような、各種の電子レンジ調理用食品の中にあつて、とりわけ、本発明者らが開発目標としてきた肉、魚等の材料を中心とした電子レンジ調理用食品、及びそれと関連する食品について、これまでの開発例をいくつか例示的にあげると、その代表的なものとして、以下のようなものがあげられる。

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【0005】すなわち、まず、フライ食品に関するものとして、従来、各種の製品及び製法が提案されており、例えば、油ちょうした直後のフライ食品と同様の食感が得られる電子レンジ調理用フライ食品に関するものとして、熱凝固性を有する起泡剤で含気させた小麦粉、水、調味料からなるバターに食品素材を浸漬した後、パン粉を付着させて油ちょうし、凍結することを特徴とする電子レンジ調理用冷凍フライ食品の製造方法（特開昭64-60334号公報）、また、解凍後離水がほとんどなく長時間保存しても品質低下のないフライ食品に関するものとして、中種に生澱粉等からなるバター液を付け、ころもがけした後マイクロ波加熱することを特徴とするフライ食品ころも材の製造法（特開昭59-162844号公報）、また、通常のできたてのフライ同様の食感、風味、クリスピー感等を実現することを目的とする電子レンジ用フライ様食品を提供するものとして、食品基材の外側に、少なくともバター層、第1ブレッダー層、エマルジョン層及び第2ブレッダー層がこの順に形成されていることを特徴とする電子レンジ用フライ食品（特開平2-16937号公報）、等が提案されている。

【0006】また、電子レンジ調理用天ぷら製品に関するものとして、例えば、粉末状小麦蛋白、粉末状乳蛋白濃縮物、コーンフラワー、コーンスターチのうち少なくとも3品を含むことを特徴とする天ぷら用打粉配合品（特開平4-187058号公報）、等が提案されている。

【0007】また、唐揚げ製品に関するものとして、例えば、電子レンジで加熱調理するのみで油揚げをしたのと同様の外観及び食感を有する食品を提供することを目的とするものとして、ナッツ類の粗碎物等の離水和性粒状物質と、卵白粉、小麦蛋白質粉末等の高蛋白質粉末と、穀粉及び／又は澱粉類と、着色料とを含有することを特徴とする唐揚げ用ミックス粉（特開昭63-233751号公報）、また、揚げあがりの外観が好ましく、肉の臭みや揚げ衣の臭みの無い唐揚げ用ミックス粉を得ることを目的とするものとして、単糖類、カゼイン、乾燥卵白、アミノ酸、粉碎した茶の葉、粉末醤油を含むことを特徴とする唐揚げ用ミックス粉（特開平4-187059号公報）、等が提案されている。

【0008】更に、通常のフライパン等で加熱調理した焼き物と同等の焼き色をした魚介類の調理食品を得ることを目的とするものとして、調理もしくは未調理の魚介類又はその加工品を和紙等で包んで加熱調理する際に、これら魚介類又はその加工品の水分を、加熱時にドリップが出ない程度に調整してから、その表面にキシロース、グルコース等の糖類を含む塗布液を塗布し、その後、前記和紙等を介して電子レンジにより魚介類又はその加工品を誘電加熱することを特徴とする魚介類の調理製造方法（特開昭63-296667号公報）、等が提

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案されている。

【0009】このように、肉、魚等の材料を対象とする電子レンジ調理用食品の開発例は、多岐に及んでおり、これらの中には、例えば、冷凍揚げ物製品を解凍、加熱して通常の揚げ物製品に遜色のない製品を得ることを目的としたいわゆる一般的な電子レンジ解凍及び加熱に関するもののみならず、例えば、電子レンジ調理により、通常の揚げ物製品、焼き物製品と同等の外観、風味、食感等を付与することを目的としたものも提案されているが、後者にあっても、例えば、前記した唐揚げ用ミックス粉の例にみるように、特定の製品を対象とした特定の組成のものに限られており、しかも、その改善目標も、製品の外観、風味、食感等を中心としたものにほとんど限られており、従って、従来の開発例をみても、本発明が一つの目標としている調理時における操作性の改善、調理器具、及び包装袋等への付着性の改善等の問題について言及しているものは、全く見当たらないというのが実情であった。

【0010】一方、後記するように、本発明において必須成分として使用しているカードランについては、従来、一般に、食品のゲル化剤として、各種食品のゲル化性、テクスチャー等の物性面での改善を目的として種々の製品の開発に利用されており、その開発例も多岐に及んでいるが、その中にあって、その代表的なものをいくつか例示すると、例えば、水産煉製品の表面に薄く、しっかりとした皮膜を形成するものとして、カードランのゲル状膜で被覆してなる水産煉製品（特開平2-79961号公報）、また、焼き魚、揚げフライ等の食品の表面を常温凝固膜で被覆した保存食品を提供するものとして、カードランの分散液を食品に付着し、加熱雰囲気

でカードランを熱凝固させて、食品の表面をカードランで被覆することを特徴とする常温凝固膜で被覆した保存食品（特開平3-61454号公報）、等が提案されている。

【0011】また、カードランの有する各種機能を電子レンジ加熱調理食品に利用するものとして、カードランを含有してなるゼリー類、あん・菓子類、即席麺類、卵加工品等の電子レンジ加熱調理用食品（特開平2-411号公報）、また、電子レンジによる加熱ムラのない品質良好なホットゼリーなどの調理食品を提供するものとして、加熱用容器にカードランを収納してなる電子レンジ加熱調理用食品（特開平2-124066号公報）、等が提案されている。

【0012】しかしながら、これらのものは、そのほとんどがカードランの有するゲル化性、テクスチャー改良性、結着性、保水性、加熱凝固性等の機能をそのまま利用したものに限られており、当該カードランについても、本発明が一つの目標としている調理時における操作性の改善、調理器具、及び包装袋等への付着性の改善等の問題について言及しているものは、全く見当たらない

というのが実情であった。

【0013】このように、従来、電子レンジ調理用食品が種々開発されているものの、いずれも、特定の製品を対象とした個別的な技術に関するもの、食感、風味、物性面での改善を中心としたもの等がほとんどであり、とりわけ、肉、魚等の材料を用いた焼成製品、唐揚げ様製品であって、通常の加熱、焼成調理を施した製品と同等の加熱、焼成効果を製品に付与することが可能な電子レンジ調理加工技術については、その開発例が限られており、しかも、従来の肉、魚等の材料を使用した製品においては、実際の調理にその前処理を含めて手間と時間を要する等の問題点を有するものが多く、従って、前記したような製品の外観、風味、食感等を通常の調理製品と同等のものになし得るだけでなく、電子レンジ調理の本来の目標である調理時における操作性を改善し、簡便、かつ迅速に調理することが可能な電子レンジ調理用素材、製品、及び加工技術を開発することが当業界において強く要請されている状況にあった。

【0014】

【発明が解決しようとする課題】このような状況を踏まえ、本発明者らは、前記したような従来の問題点を解決すると共に、肉、魚等の材料からなる調理製品を電子レンジで調理するだけで、通常の加熱、焼成調理手段により製造した製品と同等の外観、風味、食感等を有するのみならず、当該調理時における操作性を改善し、電子レンジ調理技術が本来目標としている簡便性、迅速性をそのまま生かした形で調理することが可能な新しい調理素材、製品及び調理技術を開発することを目標として鋭意研究を積み重ねた結果、その成分特性によって、製品の表面部における電波吸収力を高めその加熱効率を向上させることが可能であると同時に、調理時の操作性を顕著に改善し得る特定の組成及び特性からなる電子レンジ調理用調味料を使用することによって、所期の目的を達成し得ることを見出し、本発明を完成するに至った。

【0015】すなわち、本発明は、肉、魚等の材料に添加して電子レンジで調理することにより、従来、電子レンジ調理の欠点であるとされていた当該材料からの離水、肉汁等の遊離を確実に防ぎ、やわらかな食感と材料本来の旨味を保つようにすることができる電子レンジ調理用調味料を提供することを目的とするものである。

【0016】また、本発明は、肉、魚等の材料を電子レンジで調理することにより、通常のフライパン等で加熱調理したものと同等のこんがりとしたこげめと照りを付与することができる電子レンジ調理用調味料を提供することを目的とするものである。

【0017】また、本発明は、肉、魚等の材料の表面のころもを、卵白、アルブミン、小麦粉等の熱凝固性蛋白を使用した場合よりもしっかりと保持することを可能にすると共に、材料からの離水、肉汁等の遊離を確実に防ぐことが可能な電子レンジ調理用調味料を提供すること

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を目的とするものである。

【0018】更に、本発明は、材料個々に対し均等に調味料の粉をまぶすことができ、しかも、その粉が調理器具、その他に付着するのを防止するのに顕著な効果があり、手で材料に調味料をまぶしてから電子レンジで加熱するまでの調理作業をきわめてスムーズ、かつ簡便に行うことができると共に、材料を均一に焼き上げることができるという優れた特性を有する電子レンジ調理用調味料を提供することを目的とするものである。

【0019】

【課題を解決するための手段】このような目的を達成するための本発明は、次の(1)～(2)の技術的手段からなる。

(1) 食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、及びカードランを含有してなることを特徴とする電子レンジ調理用調味料。

【0020】(2) 食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、カードラン、及び澱粉類及び／又は穀類を含有してなることを特徴とする電子レンジ調理用調味料。

【0021】続いて、本発明について、更に詳細に説明する。本発明は、前記したように、食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、及びカードラン、更には、澱粉類及び／又は穀類を含有してなることを特徴とする電子レンジ調理用調味料に関するものであり、とりわけ、肉、魚等の材料に添加して電子レンジで調理するのに有用な電子レンジ調理用調味料製品に関するものであって、この場合、最終製品としては、いわゆる肉又は魚をそのまま焼成した焼成製品、照り焼き様製品、ころもを付加して焼成した唐揚げ様製品等、更に具体的に云えば、焼き鳥、ブリの照り焼き、さばの籠田揚げ等の製品が代表的なものとして例示されるが、これに限らず、これらと同等又は類似のものであれば、その種類を問わず対象とすることができる。従って、本発明で云うところの肉、魚等の材料も、畜肉、魚介類をはじめ、それと同等又は類似のものであれば、その種類及び形態を問わず対象とされる。

【0022】次に、本発明の電子レンジ調理用調味料の必須成分であるところの食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油の後者としては、液状醤油の粉末加工品等の如く、当該食塩とアミノ酸を含有するものであれば、特に限られるものではなく、その種類を問わず使用することができる。また、本発明で云うところの当該粉末醤油は、同効の合成品をも含むものとして定義される。また、糖類としては、単糖類、2糖類、3糖類、オリゴ糖、糖アルコール、等の単独又は併用したものが例示されるが、好適には、グルコース、フラクトース、蔗糖、麦芽糖、水飴加水分解物、オリゴ糖、等が使用される。

【0023】また、本発明で使用されるカードランは、

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一般に、 β -1, 3-グルコシド結合を主体とする加熱凝固性多糖類として知られているものであり、例えば、アルカリゲネス属、アクロバクテリウム属の菌等が生産するものとして知られている通常のカードランの粉末、顆粒製品等を使用することができる。

【0024】更に、本発明の1態様として配合される澱粉類及び／又は穀類としては、いわゆる唐揚げのころも材として使用される通常の澱粉類、穀類であればその種類を問わず使用することができ、例えば、コーンスターチ、馬鈴薯澱粉、甘薯澱粉、小麦粉、米上新粉、白玉粉等があげられる。

【0025】本発明の電子レンジ調理用調味料は、前記した適宜の形態に予め加工した肉、魚等の材料に直接添加する形で使用されるが、その場合、当該調味料を簡便、かつ迅速にその表面部に均一に付着させると共に、調理器具等、その他への付着を確実に抑制し、調理時における操作性を顕著に改善することを可能とするために、当該調味料中に、必須成分として前記カードランを配合することが重要であり、例えば、カラギナン、ジェランガム等、他の類似の加熱凝固性ゲル化剤を使用してもこのような効果は得られず、所期の目的を達成することはできない。

【0026】また、前記した如く、調理時の操作性を向上せしめるために、本発明の電子レンジ調理用調味料は、その形態としては、粉末状、顆粒状等の形態に加工して使用されるが、この場合、粉末状と同等又は類似のものであれば適宜採用することができる。

【0027】本発明の電子レンジ調理用調味料は、第1の態様として、前記したような食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、及びカードランを原料中に配合することにより製造されるが、その場合の原料配合は、食塩4.16～28部とアミノ酸0.18～1.2部又は食塩とアミノ酸を含有する粉末醤油を13～79部、糖類を7～36部、カードランを4～27部、とすることが好適なものとしてあげられる。

【0028】また、本発明の電子レンジ調理用調味料は、第2の態様として、前記したような食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、カードラン、及び澱粉及び／又は穀類を原料中に配合することにより製造されるが、その場合の原料配合は、食塩3.3～12部とアミノ酸0.13～1.11部又は食塩とアミノ酸を含有する粉末醤油を9～33.3部、糖類を11～36部、カードランを1.5～21部、澱粉及び／又は穀類を36～75部、とすることが好適なものとしてあげられる。

【0029】これらの場合、原料配合の具体的方法は、通常の粉体混合装置、例えば、V型ミキサー、リボンミキサー等により一括混合する方法等が例示されるが、これに限らず、これらを順次配合してもよく、また、前記した基本原料成分に加え、他の原料成分を付加してもよ

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い。このようにして製造される本発明の電子レンジ調理用調味料は、前記した適宜の形態の肉、魚等の材料に適宜の手段で添加し、その表面部に均一に付着させるようにして使用されるが、この場合、例えば、肉又は魚のスライス片を本発明の電子レンジ調理用調味料と共に例えば、ビニール包装袋等の適宜の包装袋中に収納し、全体を軽く振るようによれば簡便、かつ迅速に当該スライス片の表面に当該調味料を均一に付着させることができる。このように、本発明の電子レンジ調理用調味料は、適宜の包装袋と組み合わせて使用し得る点で、包装袋への付着性の問題があつてその実現化が困難であつた従来の製品にない長所を有する。

【0030】このようにして材料の表面に本発明の電子レンジ調理用調味料を添加した後、電子レンジで調理することにより、従来、電子レンジ調理の欠点とされていた当該材料からの離水、肉汁等の遊離が確実に防止されると共に、通常のフライパン等で加熱調理したものと同等のこがりとしたこげめと照りを付与することができ、これによって、やわらかな食感と材料本来の旨味を保つようにすることができる。尚、この場合、本発明の電子レンジ調理用調味料は、電子レンジと同等のマイクロ波加熱調理装置であれば、その種類を問わず使用し得るものであることは言うまでもない。

【0031】以上のように、本発明の電子レンジ調理用調味料は、最終製品の外観、風味、食感等を通常の加熱、調理手段で調理したものと同等のレベルで付与することが可能であるが、それだけではなく、従来のものと比較して、材料表面に調味料を均一に付着させる前処理操作がきわめて簡便、かつ迅速に行えるようになり、その調理時における操作性が顕著に改善され、電子レンジ調理技術が本来目標としているところの簡便、かつ迅速な調理を確実に実現化することを可能にしたと云う点で、従来の製品にみられない格別な特徴を有するものである。

【0032】尚、このような効果をもたらす本発明の電子レンジ調理用調味料の特性及び作用について更に説明すると、電子レンジで加熱した際に、マイクロ波による材料内部から表面部への加熱と共に、材料の表面に均一に付着させた食塩とアミノ酸が材料表面部の電波吸収力を高め、それによって、材料表面部から内部への加熱状態をも得ることができ、加熱効率を向上することができるため、材料全体を均一に、かつ迅速に加熱することができるようになる。

【0033】また、糖類は、糖とアミノ酸及び糖単独による褐変が生起することにより製品の表面に照りを付与すると共に、若干の電波吸収作用をも有する。また、澱粉類及び／又は穀類は、ころも形成機能を有するものとして使用されるが、前記した各成分と併用する形で当該ころもを付着させた場合は、単独使用の場合と比較し

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て、いわゆる唐揚げ様の製品を簡便、かつ迅速に得ることができる。

【0034】更に、カードランは、加熱前においては水に溶けず、加熱することにより熱水に溶ける性質を有すると共に、また、ゲル化により材料全体の結着性を高める作用を有する。この場合、熱凝固性ゲル化剤であるカードランが70~100℃（常法による電子レンジ調理では表面温度が100℃以上とはならない。）と云う温度でゲル化して、材料表面のころもを、通常の熱凝固性蛋白（卵白、アルブミン、小麦粉等）よりもしっかりと保持すると共に、材料からの離水、肉汁等の遊離を防ぐ作用を有する。

【0035】更に、本発明においては、当該結着性のみならず、本発明者らの知見によれば、当該カードランを配合した場合、本発明の電子レンジ調理用調味料の調理時における調理器具、包装袋等への付着を抑制し、調理時の操作性を顕著に改善する特性が得られることが分った。従つて、本発明の電子レンジ調理用調味料を使用すれば、当該調味料を適宜の包装袋と組み合わせてなる簡便な形の使用形態で製品化することが可能となる。

【0036】試験例

次に、試験例により本発明の電子レンジ調理用調味料の作用効果について具体的に検証した結果を示す。

(1) 食塩とアミノ酸、及び各種食品等の材料の電子レンジによる誘電率（加熱のされ易さ等）の測定
食塩とアミノ酸（MSG）、及び各種食品等の材料の電子レンジによる加熱のされ易さを、物質に電界が印加されたときに蓄えられる電気エネルギーと発熱などによって失われる電気エネルギーの大小を表す誘電率を測定することにより調べた。

【0037】表1は、誘電率をHP85070A誘電体測定用プローブキット（ヒューレット・パッカード社製、米国）により、周波数が2450MHzのマイクロ波で上記材料を加熱した場合における当該材料にまわり込む電界の反射量を測定することで誘電率を求めた結果を示したものである。表中、 e' は、比誘電率を、 e'' は、比誘電損を、また、 $\tan \delta$ は、誘電損失角を、それぞれ表す。この場合、 e' の比誘電率は、エネルギーを蓄える力（電気の取り込み易さ）を、 e'' の比誘電損は、エネルギーが熱に変わってしまう程度（加熱のされ易さ）を、また、 $\tan \delta$ の誘電損失角は、エネルギー損失の少なさ（大きいほど熱に変わりやすい）を、それぞれ表すものとして示される。その結果、表1に示されるように、食塩とアミノ酸を含有する濃口醤油（HKP）、食塩水（10%）、アミノ酸（MSG）水溶液（5%）が高い比誘電率を有することが分かった。

【0038】

【表1】

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表1 各種食品の誘電率

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			ϵ'	ϵ''	$\tan \delta$	n
肉類	牛肉	サーロイン	32.553	9.658	0.2967	4
		モモ赤身1	53.435	17.018	0.3185	4
		モモ赤身2	48.102	15.382	0.3198	10
	豚肉	肩ロース(脂身無し)	53.588	16.245	0.3035	4
		肩ロース(脂身付き)	29.075	8.568	0.2955	4
		モモ赤身1	55.168	18.128	0.2923	4
		モモ赤身2	52.640	16.526	0.3139	10
		モモ脂肪部	9.898	2.147	0.2285	10
	鶏肉	皮なし胸肉	52.964	17.273	0.3261	10
		皮なしモモ肉	54.664	16.417	0.3003	10
	魚肉	ブリ切り身	30.162	9.737	0.3228	10
		ブリ血合い肉	24.652	6.339	0.2571	10
野菜	ジャガイモ(男爵)		56.480	16.665	0.2951	4
	(メークイン)		65.147	18.795	0.2885	4
	サツマイモ		48.297	14.533	0.3013	4
	大根		58.418	10.890	0.1920	4
	人参		66.750	20.160	0.3020	4
果物	りんご(ふじ)		56.560	10.835	0.1916	4
	パイナップル		66.665	14.533	0.2180	4
液体	イオン交換水		77.287	9.516	0.1231	10
	濃口醤油(日K P)		43.830	98.648	2.2507	10
	食塩水(10%)		57.691	107.036	1.8553	10
	MSG水溶液(5%)		75.223	23.850	0.3171	10
	(10%)		72.145	34.199	0.4740	10
気体	空気		0.996	-0.005	-0.0050	10

【0039】(2) 各種材料の誘電率、誘電損の分布
各種食品(肉類、野菜、果物)と水、空気、及び本発明の電子レンジ調理用調味料について、誘電率、誘電損の分布を測定した結果を図1に示す。図1に示されるように、本発明の電子レンジ調理用調味料は、他の各種食品、及び水、空気と比較して、高い比誘電損、及び比誘電率を有するものであることが分かった。

【0040】(3) 本発明の電子レンジ調理用調味料による比誘電損(加熱のされ易さ)向上効果の測定
本発明の電子レンジ調理用調味料(調味粉末)を用いて食品材料の豚モモ赤身进行处理した場合の比誘電損を測定した結果を、無処理の場合と比較して、図2に示す。図2に示されるように、本発明の電子レンジ調理用調味料(調味粉末)により処理することにより比誘電損が顕著に向上され、いわゆる加熱され易さを向上させる作用効果があることが確認された。

【0041】(4) 付着ロス比較試験

本発明の電子レンジ調理用調味料に関し、調理器具、包装袋、その他に付着しにくく、優れた操作特性を付与せ

しめるカードランの付着性改善効果について、他の増粘多糖類との比較において、以下の方法により検討した。
すなわち、ポリ袋にカードラン、キサンタンガム、ジェランガムを添加し、他の原料配合は実施例2と同様に調製した調味料をそれぞれ用意し、ポリ袋に調理する材料を入れたものを3種用意して、上記調味料各々をそれぞれポリ袋中に収納し、全体をかるく振るようにして調味料を材料に付着させた。

【0042】その後、ポリ袋中から材料を取り出して材料に付着しきれずにポリ袋に残った調味料を計測し、カードランを添加した調味料のポリ袋中の残存量(逸散程度)を1として他の調味料の残存量と比較した。また、ポリ袋中から材料を取り出して電子レンジ調理ができるように、材料を皿に乗せた場合の皿への調味料の付着量を1として他の調味料の皿への付着量と比較した。なお、これらの残存量、及び付着量は、これらの重量を計測することにより算出した。

【0043】その結果、図3に示されるように、他の増粘多糖類と比較して、ポリ袋への付着程度、皿への付着

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程度のいずれについても、カードランの付着ロス、すなわち逸散程度は低いものであり、本発明の電子レンジ調理用調味料におけるカードランの有する付着性改善効果が優れたものであることが確認された。

【0044】

【実施例】次に、本発明を実施例に基づいて具体的に説明するが、本発明は当該実施例のみに限定されるものではない。

実施例1

(1) 原料配合

食塩13.5gとアミノ酸0.6gを含有する粉末醤油42g、蔗糖からなる粉末形態の糖類7g、顆粒形態のカードラン4.2gを混和して、本発明の粉末状の電子レンジ調理用調味料を調製した。

【0045】(2) 電子レンジによる魚の照り焼き様製品の調理

上記のようにして調製した電子レンジ調理用調味料7.5g、ブリの切り身100g、をビニール製の透明包装袋中に収納し、全体をよく振るようにして、当該調味料をブリの切り身の表面にまんべんなくまぶすようにして均一に付着させた。次いで、切り身を取り出し、皿状容器にいれ、ラップをして、そのまま電子レンジ(500W)にて表面温度70~100℃で2分間加熱調理することにより、通常のフライパン等で加熱調理したようなこんがりとしたこげめと照りを有する照り焼き様製品が得られた。

【0046】実施例2

(1) 原料配合

食塩5.5gとアミノ酸0.25gを含有する粉末醤油17g、蔗糖からなる粉末形態の糖類24g、粉末形態のカードラン9g、馬鈴薯からなる澱粉7.93g、小麦粉37gを混和して、本発明の粉末状の電子レンジ調理用調味料を調製した。

【0047】(2) 電子レンジによる唐揚げ様製品の調理

上記のようにして調製した電子レンジ調理用調味料7~10g、豚肉の切り身100g、をビニール製の透明包装袋中に収納し、全体をよく振るようにして、当該調味料を鶏肉の切り身の表面にまんべんなくまぶすようにし

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て均一に付着させた。次いで、切り身を取り出し、皿状容器にいれ、ラップをして、そのまま電子レンジ(500W)にて表面温度70~100℃で2分間加熱調理することにより、通常のフライパン等で加熱調理したようなこんがりとしたこげめと照りを有する唐揚げ様製品が得られた。

【0048】(3) 酢豚の調理

上記のようにして調理した豚肉の唐揚げ様製品をいったん皿状容器に取り出し、これに別途調製した酢豚用具入りソースをかけて全体を軽く混ぜた後、ラップをしないで、更に電子レンジ(500W)で2分間加熱して酢豚に仕上げた。

【0049】

【発明の効果】以上詳述したとおり、本発明は、食塩とアミノ酸又は食塩とアミノ酸を含有する粉末醤油、糖類、カードラン、更には、澱粉及び/又は穀粉を含有してなることを特徴とする電子レンジ調理用調味料に関するものであり、本発明によれば、肉、魚等の材料に上記調味料を添加して電子レンジで調理することにより、電子レンジ調理の欠点である材料からの離水、肉汁等の遊離を防ぎ、やわらかな食感と材料本来の旨味を保つようにすることができる。

【0050】また、通常のフライパン等で加熱調理したものと同等のこんがりとしたこげめと照りを付与することができる。更に、例えば、包装袋中で、材料個々に対し均等に調味料の粉を簡便、かつ迅速にまぶすことができ、しかも、その粉が調理器具、包装袋、その他に付着しにくいいため、手で材料に調味料をまぶしてから電子レンジで加熱するまでの調理作業をスムーズ、かつ簡便に行うことができると共に、材料を均一に焼き上げることができる。

【図面の簡単な説明】

【図1】各種食品の誘電率・誘電損の分布を示す説明図である。

【図2】本発明の電子レンジ調理用調味料(調味粉末)処理による比誘電損(加熱され易さ)向上効果を示す説明図である。

【図3】カードランと他の増粘多糖類での付着ロス比較試験の結果を示す説明図である。

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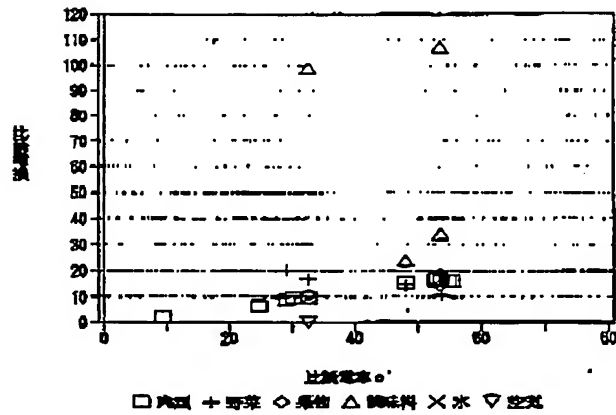
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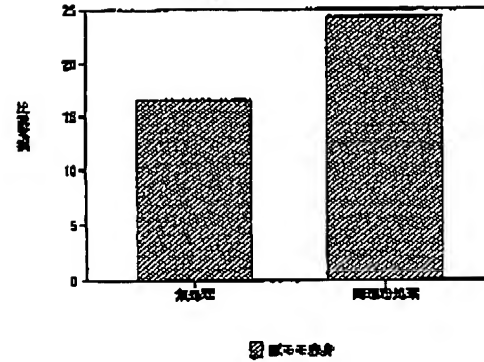
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【図1】

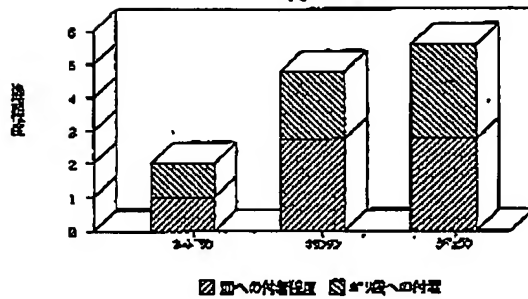
食品の割合率・割合率の分布



【図2】

調理方法による
比較基準 (比較基準) 向上効果

【図3】

カードランと他の増産多産での
付帯コスト比較

フロントページの続き

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